

VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE, LAC, DENV and CHIK

Prepared by Lisa M. Reed, Scott Crans and Mark Robson

Center for Vector Biology, Rutgers University

CDC WEEK 30: 26 July to 1 August, 2015

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Culiseta melanura and Eastern Equine Encephalitis

SITE/Boxes	Inland or Coastal	Historic Population Mean	Current Weekly Mean	Total Tested* (Collected)	Total Pools Tested* (Submitted)	EEE Isolation Pools	MFIR
Bass River (Burlington Co.)/5	Coastal	0.33	0.20	7 (8)	5 (6)		
Green Bank (Burlington Co.)/25	Coastal	3.83	0.60	31 (46)	6 (7)		
Corbin City (Atlantic Co.)/25	Coastal	0.93	0.20	137 (142)	7 (8)		
Dennisville (Cape May Co.)/50	Coastal	6.83	0.74	197	8		
Winslow (Camden Co.)/50	Inland	2.08	1.70	906	22	1	1.10
Centerton (Salem Co.)/50	Inland	1.69	1.06	523	16		
Turkey Swamp (Monmouth Co.)/49	Inland	1.08	0.24	122 (132)	8 (9)		
Glassboro (Gloucester Co.)/50	Inland	0.44	0.08	126	9		

*Current week (in parentheses) results pending.

Remarks: First detection of EEE in a pool of *Culiseta melanura* was collected at the Winslow resting box site on the 27th of July. Current MFIR at that resting box site is 1.10.

Traditional Resting Box Sites: One EEE positive *Cs. melanura* pools has been detected at the state resting box sites to date. 2049 *Cs. melanura* from 81 pools have been tested for EEE with an additional 4 pools containing 33 *Cs. melanura* to be tested. Overall MFIR for the state is 0.49.

		Additional <i>Cs. melanura</i> trapped by counties *traps with positives indicated in BOLD .			
County	Trap types*	Pools	Mosquitoes	Positives	MFIR
Atlantic	CO ₂	8	72		
Burlington	CO ₂	33	1328		
Cape May	GR, RB	23	167		
Cumberland	CO ₂ , RB	8	68		
Middlesex	RB	5	38		
Ocean	CO ₂ , GR, RB	8	34		
TOTAL		85	1707		

Additional *Cs. melanura*: Counties maintain trap sites for *Cs. melanura* in other areas. Additional pools from these sites were not positive.

Species other than <i>Cs. melanura</i>	Pools	Mosquitoes	Positives	MFIR
<i>Aedes cantator</i>	16	26		
<i>Aedes sollicitans</i>	6	231		
<i>Anopheles bradleyi</i>	3	5		
<i>Anopheles crucians</i>	1	1		
<i>Anopheles punctipennis</i>	4	10		
<i>Anopheles quadrimaculatus</i>	2	51		
<i>Coquillettidia perturbans</i>	46	1068		
<i>Culex erraticus</i>	2	2		
<i>Culex pipiens</i>	101	779		
<i>Culex restuans</i>	2	2		
<i>Culex salinarius</i>	23	456		
<i>Culex</i> sp.	9	19		
State Total	215	2650		

Additional Species: Eleven additional species were tested for EEE and no positives were detected.

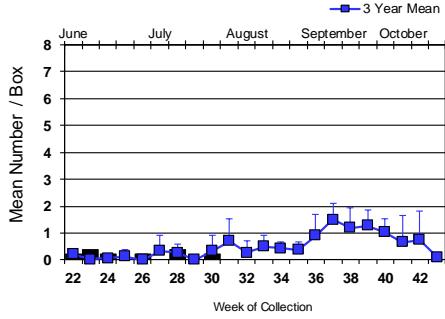
Horses and Humans: No horses or humans have been reported with EEE.

Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

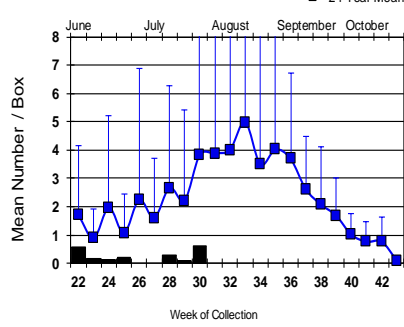
Culiseta melanura Population Graphs

Coastal

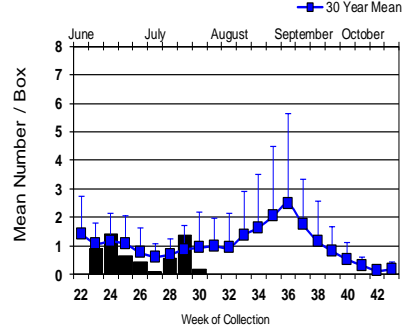
BASS RIVER (Burlington Co.)



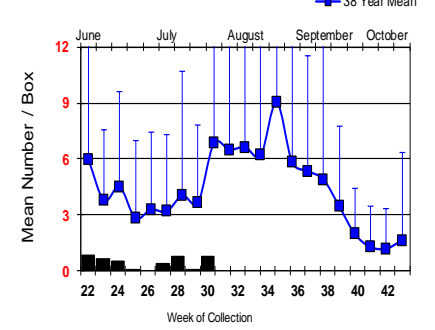
GREEN BANK (Burlington Co.)



CORBINCITY (Atlantic Co.)

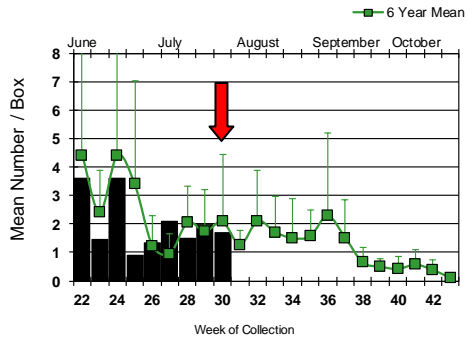


DENNISVILLE (Cape May Co.)

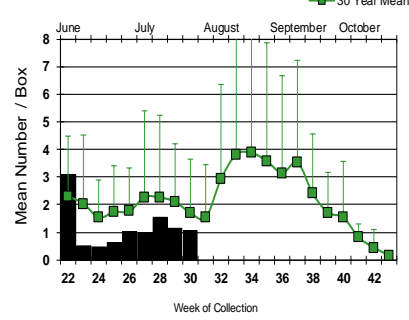


Inland

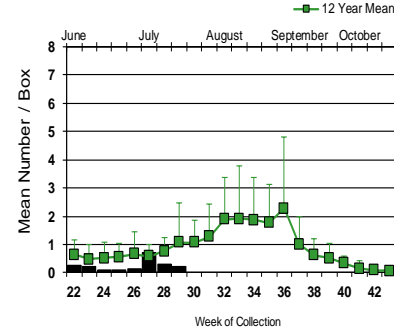
WINSLOW (Camden Co.)



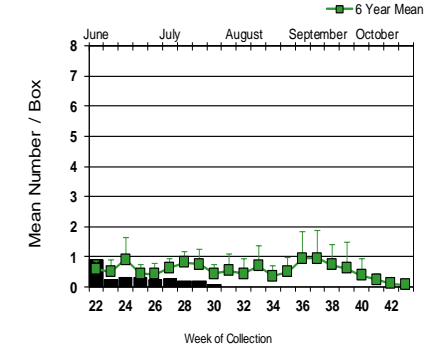
CENTERTON (Salem Co.)





TURKEY SWAMP (Monmouth Co.)



GLASSBORO (Gloucester Co.)



Populations of *Cs. melanura* at most traditional resting box sites remain at or well below their averages. First detection of a EEE positive pool in *Cs. melanura* has occurred at the Winslow site, sampled on 27th July.

  = Positive pool(s) detected (red = melanura, purple = other species).

EEE in US (2015 cumulative cases): (Black or Red = previous + new reported cases occurring)

- equine: FL(18/1goat) MS(2) NC(1) SC(1) TX(6) VA(1)
- mosquito pools: NY(3)
- sentinel: FL(56), TX(16)
- human: LA (1)

West Nile Virus Positive Organisms in US, 2015

West Nile in US (2015 cumulative cases): Single black values indicate no change from previous week. Black values / red values equals previous week/**New totals**.
 Note: Data reported by all states should be considered provisional and subject to change. Sources for this table can be found [here](#).

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Alabama					
Alaska					
Arizona	0	2/59		0	1/6
Arkansas				0	1
California	247/301	756/1058	43/45		1/8
Colorado	3	10/30		1/2	1/3
Connecticut		5			0
Delaware	1?				1
DC					0
Florida		6	19/33		3
Georgia	0	0		0	0
Hawaii					
Idaho	0	12		1	2
Illinois	2/4	9/16		0	0
Indiana	0	15/41			0
Iowa		0		0	0
Kansas		0			2/4
Kentucky				0	
Louisiana	3	178			3/4
Maine					
Maryland					
Mass.		10/37		0	0
Michigan	3/5	1			
Minnesota		1			
Mississippi		3/25		0	2/3
Missouri		1		0	0

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					1
Nebraska	0	10/32		0	3/5
Nevada		7/63			
New Hampshire		0		0	0
New Jersey	2	39/116		0	0
New Mexico					1
New York		5/12			
North Carolina					
North Dakota	0	2/4		0	1
Ohio		11/28			2
Oklahoma		2			7/8
Oregon	0	7	0	0	0
Pennsylvania	3	185/565			1
Rhode Island		0		0	0
South Carolina					
South Dakota		1			1/2
Tennessee		6/117			1
Texas	3	141/483		2	3/9
Utah	1	9/22			
Vermont		4			
Virginia					
Washington	2	57/62		1/6	1/8
West Virginia					
Wisconsin	6/8	0		0	0
Wyoming					1

* Can include other species (e.g., dogs, cows) reported positive.

Protocol: New Jersey Department of Health (NJDH Public Health Environmental and Agricultural Laboratories, PHEAL) and the Cape May County Department of Mosquito Control tests mosquito pools using RT-PCR Taqman techniques.

Mosquito Species Submitted and Tested for West Nile Virus Testing through 4 August 2015

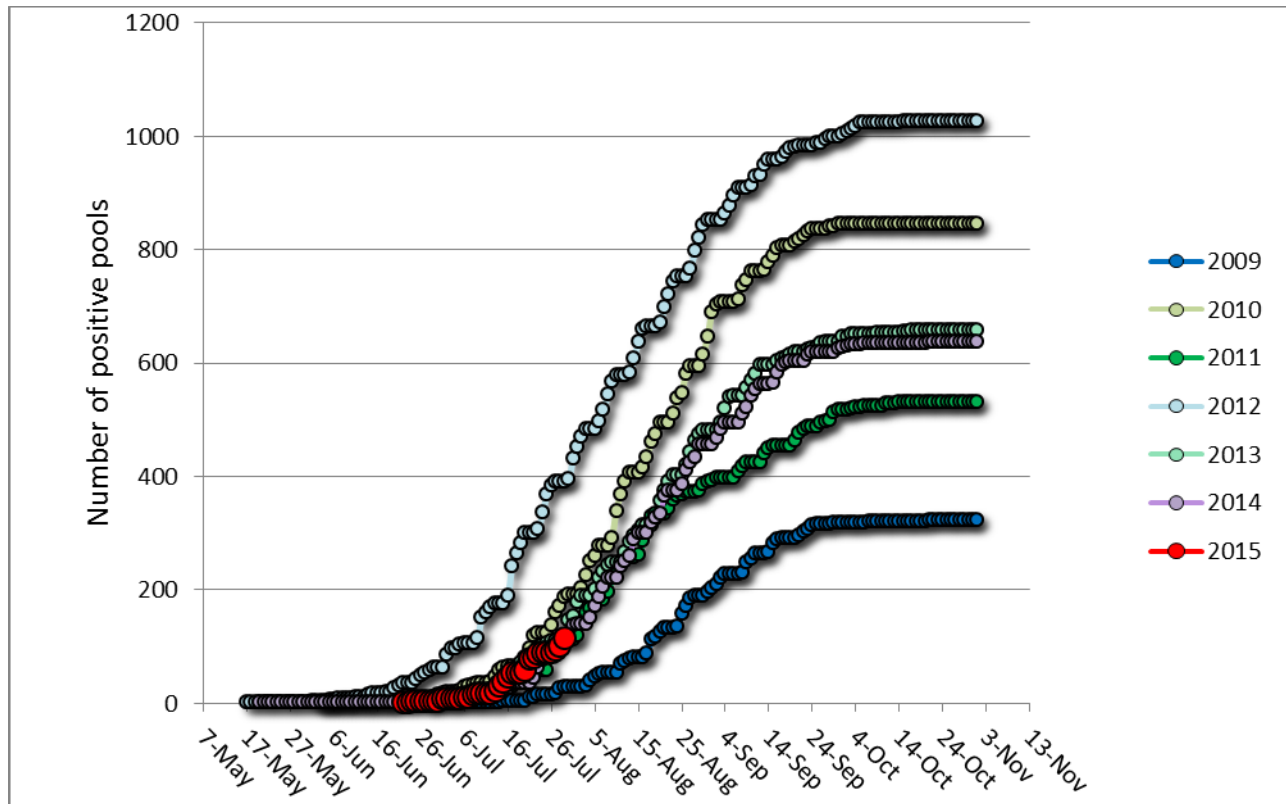
Species	Pools	Mosquitoes	Positives	MFIR
<i>Aedes albopictus</i>	276	1706	1	0.586
<i>Aedes atlanticus</i>	1	6		
<i>Aedes canadensis canadensis</i>	16	166		
<i>Aedes cantator</i>	22	196		
<i>Aedes grossbecki</i>	9	40		
<i>Aedes japonicus</i>	155	994		
<i>Aedes sollicitans</i>	6	231		
<i>Aedes taeniorhynchus</i>	2	30		
<i>Aedes triseriatus</i>	40	129		
<i>Aedes trivittatus</i>	3	4		
<i>Aedes vexans</i>	27	567		
<i>Anopheles bradleyi</i>	4	20		
<i>Anopheles crucians</i>	1	1		
<i>Anopheles punctipennis</i>	20	62		
<i>Anopheles quadrimaculatus</i>	32	557		
<i>Coquillettidia perturbans</i>	49	1117		
<i>Culex erraticus</i>	8	58		
<i>Culex pipiens</i>	219	7137	9	1.261
<i>Culex restuans</i>	182	1501	1	0.666
<i>Culex salinarius</i>	25	492		
<i>Culex sp.</i>	1124	45560	104	2.283
<i>Culex territans</i>	4	6		
<i>Culiseta melanura</i>	168	3762	1	0.266
<i>Psorophora ciliata</i>	3	20		
<i>Psorophora columbiae</i>	6	177		
<i>Psorophora ferox</i>	5	12		
Grand Total	2407	64551	116	1.797

Remarks: To date, 2407 pools of 64,551 mosquitoes from 25 species have been tested, with 116 positive pools detected, most in *Culex* pools. First positive of the season occurred in Middlesex County, in a pool of mixed *Culex*, collected on the 22nd of June. First positive pool in non-*Culex* was in an *Aedes albopictus* pool, collected in Monmouth County on 10 July. First positive pool in a non-*Culex* ornithophilic species was found in *Culiseta melanura* in Cape May 21 July. Overall state MFIR is 1.797, up from the previous week of 0.792.

Humans, Horses and Wild Birds: No human cases of WNV have been reported. For further information, see <http://www.state.nj.us/health/cd/westnile/techinfo.shtml>.

No horse cases have been detected.

Bird testing began in mid-April. Two positive birds have been reported, both corvids. To date, 26 birds have been tested. Species includes: American Crow (*Corvus brachyrhynchos* 0/1) Fish Crow (*Corvus ossifragus* 1/9), Blue Jay (*Cyanocitta cristata* 1/3), Hawk/Raptor (0/1) and other avian species (0/12). Counties (**positives**) submitting birds are Atlantic, **Burlington**, Essex, **Gloucester**, Hunterdon, Mercer, Monmouth, Morris, Ocean, Salem and Warren.



The graph above illustrates the trend of positive pools for 2015 as compared to the previous six years. Currently, the pattern of positive pools would appear to track moderate activity similar to 2011, 2013 and 2014.

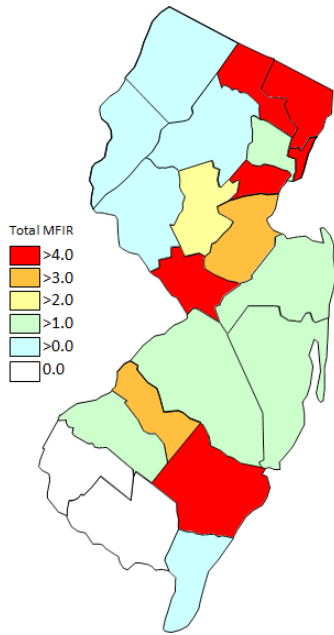
WNV Results by County through 4 August 2015

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		88	2834		
	<i>Aedes albopictus</i>	11	76		
	<i>Aedes japonicus</i>	7	30		
	<i>Aedes vexans</i>	4	229		
	<i>Coquillettidia perturbans</i>	13	413		
	<i>Culex</i> spp.	37	1876		
	<i>Culiseta melanura</i>	15	209		
	<i>Psorophora ferox</i>	1	1		
Bergen		55	3800	14	3.684
	<i>Aedes japonicus</i>	5	175		
	<i>Culex</i> spp.	50	3625	14	3.862
Burlington		83	2856	4	1.401
	<i>Aedes albopictus</i>	1	6		
	<i>Aedes japonicus</i>	1	15		
	<i>Coquillettidia perturbans</i>	1	1		
	<i>Culex salinarius</i>	4	152		
	<i>Culex</i> spp.	32	1316	4	3.040
	<i>Culiseta melanura</i>	44	1366		
Camden		136	4750	13	2.737
	<i>Aedes albopictus</i>	6	16		
	<i>Aedes canadensis canadensis</i>	2	12		
	<i>Aedes cantator</i>	1	1		

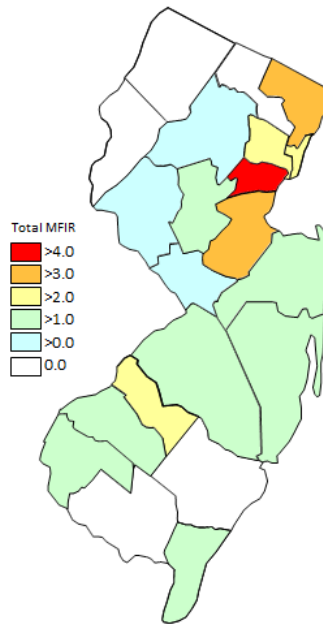
<i>Aedes japonicus</i>	29	304		
<i>Anopheles punctipennis</i>	2	6		
<i>Culex</i> spp.	71	3499	13	3.715
<i>Culiseta melanura</i>	23	907		
<i>Psorophora ferox</i>	2	5		
Cape May	461	2909	3	1.031
<i>Aedes albopictus</i>	19	28		
<i>Aedes canadensis canadensis</i>	5	5		
<i>Aedes cantator</i>	16	26		
<i>Aedes japonicus</i>	53	130		
<i>Aedes triseriatus</i>	21	27		
<i>Aedes vexans</i>	2	5		
<i>Anopheles bradleyi</i>	3	5		
<i>Anopheles punctipennis</i>	5	5		
<i>Anopheles quadrimaculatus</i>	26	513		
<i>Coquillettidia perturbans</i>	14	420		
<i>Culex erraticus</i>	2	2		
<i>Culex pipiens</i>	101	779	1	1.284
<i>Culex restuans</i>	139	532	1	1.880
<i>Culex salinarius</i>	14	48		
<i>Culex</i> spp.	6	14		
<i>Culex territans</i>	4	6		
<i>Culiseta melanura</i>	31	364	1	2.747
Cumberland	86	1619		
<i>Aedes albopictus</i>	6	10		
<i>Aedes atlanticus</i>	1	6		
<i>Aedes canadensis canadensis</i>	2	53		
<i>Aedes cantator</i>	1	2		
<i>Aedes grossbecki</i>	9	40		
<i>Aedes japonicus</i>	1	6		
<i>Aedes sollicitans</i>	6	231		
<i>Aedes taeniorhynchus</i>	2	30		
<i>Aedes triseriatus</i>	1	4		
<i>Aedes trivittatus</i>	1	2		
<i>Aedes vexans</i>	9	274		
<i>Anopheles bradleyi</i>	1	15		
<i>Anopheles punctipennis</i>	1	13		
<i>Anopheles quadrimaculatus</i>	3	23		
<i>Coquillettidia perturbans</i>	6	58		
<i>Culex restuans</i>	1	1		
<i>Culex salinarius</i>	5	256		
<i>Culex</i> spp.	14	332		
<i>Culiseta melanura</i>	8	68		
<i>Psorophora ciliata</i>	3	20		
<i>Psorophora columbiae</i>	5	175		
Essex	99	1751	5	2.856
<i>Aedes albopictus</i>	2	4		
<i>Aedes japonicus</i>	13	30		
<i>Aedes trivittatus</i>	1	1		
<i>Anopheles punctipennis</i>	1	2		
<i>Anopheles quadrimaculatus</i>	2	17		
<i>Culex</i> spp.	78	1691	5	2.957
<i>Psorophora ferox</i>	2	6		

Gloucester	166	6413	8	1.247
<i>Aedes albopictus</i>	54	393		
<i>Aedes japonicus</i>	4	35		
<i>Aedes triseriatus</i>	1	3		
<i>Coquillettidia perturbans</i>	1	2		
<i>Culex pipiens</i>	97	5854	8	1.367
<i>Culiseta melanura</i>	9	126		
Hudson	84	3950	8	2.025
<i>Aedes albopictus</i>	4	50		
<i>Culex</i> spp.	80	3900	8	2.051
Hunterdon	98	4900	1	0.204
<i>Culex</i> spp.	98	4900	1	0.204
Mercer	108	3227	2	0.620
<i>Aedes albopictus</i>	5	11		
<i>Aedes vexans</i>	9	54		
<i>Coquillettidia perturbans</i>	3	30		
<i>Culex pipiens</i>	20	503		
<i>Culex restuans</i>	39	965		
<i>Culex</i> spp.	32	1664	2	1.202
Middlesex	142	5562	21	3.776
<i>Aedes albopictus</i>	41	104		
<i>Culex</i> spp.	96	5420	21	3.875
<i>Culiseta melanura</i>	5	38		
Monmouth	208	3704	7	1.890
<i>Aedes albopictus</i>	90	686	1	1.458
<i>Aedes canadensis canadensis</i>	6	93		
<i>Aedes cantator</i>	4	167		
<i>Aedes japonicus</i>	2	9		
<i>Aedes trivittatus</i>	1	1		
<i>Aedes vexans</i>	1	2		
<i>Anopheles crucians</i>	1	1		
<i>Anopheles punctipennis</i>	6	13		
<i>Anopheles quadrimaculatus</i>	1	4		
<i>Coquillettidia perturbans</i>	1	1		
<i>Culex erraticus</i>	5	55		
<i>Culex restuans</i>	1	1		
<i>Culex salinarius</i>	2	36		
<i>Culex</i> spp.	77	2506	6	2.394
<i>Culiseta melanura</i>	9	127		
<i>Psorophora columbiae</i>	1	2		
Morris	111	4383	4	0.913
<i>Aedes albopictus</i>	6	160		
<i>Culex</i> spp.	105	4223	4	0.947
Ocean	94	1145	2	1.747
<i>Aedes albopictus</i>	24	154		
<i>Aedes canadensis canadensis</i>	1	3		
<i>Aedes japonicus</i>	16	69		

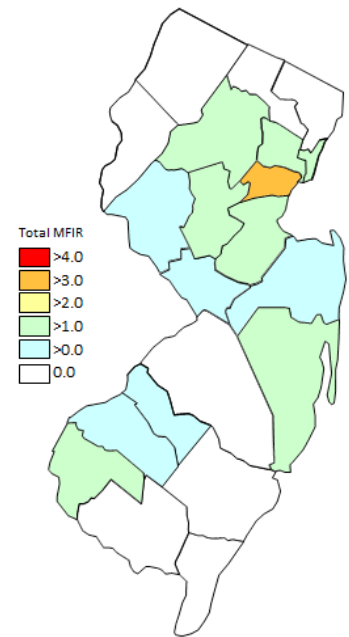
	<i>Aedes triseriatus</i>	1	11		
	<i>Aedes vexans</i>	1	2		
	<i>Coquillettidia perturbans</i>	3	125		
	<i>Culex</i> spp.	40	747	2	2.677
	<i>Culiseta melanura</i>	8	34		
Passaic		9	149		
	<i>Aedes japonicus</i>	2	5		
	<i>Aedes triseriatus</i>	2	3		
	<i>Aedes vexans</i>	1	1		
	<i>Culex</i> spp.	4	140		
Salem		69	895	1	1.117
	<i>Aedes albopictus</i>	7	8		
	<i>Aedes japonicus</i>	9	17		
	<i>Aedes triseriatus</i>	5	6		
	<i>Coquillettidia perturbans</i>	6	21		
	<i>Culex erraticus</i>	1	1		
	<i>Culex pipiens</i>	1	1		
	<i>Culex restuans</i>	2	2		
	<i>Culex</i> spp.	22	316	1	3.165
	<i>Culiseta melanura</i>	16	523		
Somerset		87	1683	2	1.188
	<i>Aedes japonicus</i>	6	93		
	<i>Aedes triseriatus</i>	4	18		
	<i>Anopheles punctipennis</i>	1	4		
	<i>Culex</i> spp.	76	1568	2	1.276
Sussex		92	1828		
	<i>Aedes japonicus</i>	7	76		
	<i>Aedes triseriatus</i>	5	57		
	<i>Anopheles punctipennis</i>	4	19		
	<i>Coquillettidia perturbans</i>	1	46		
	<i>Culex</i> spp.	75	1630		
Union		57	4084	21	5.142
	<i>Culex</i> spp.	57	4084	21	5.142
Warren		74	2109		
	<i>Culex</i> spp.	74	2109		
Grand Total		2407	64551	116	1.797



Cumulative WNV activity in 2014.



WNV activity to 27 July 2015.



WNV activity last week, 2015.

Saint Louis Encephalitis (SLE) 2015.

New Jersey will be testing for SLE this year only when adjacent states show human activity. SLE has had previous activity in New Jersey, most notably in 1964 and 1975 (CDC's SLE [website](#)), the latter prompting the surveillance reporting by Rutgers. SLE is a flavivirus and has a similar transmission pattern to West Nile, with *Culex* species as the predominant vectors.

County	Species	Pools	Mosquitoes	Positives	MFIR
Grand Total					

La Crosse Encephalitis (LAC) 2015.

New Jersey will be testing for LAC this year only when adjacent states show human activity. New Jersey has had 3 cases of this encephalitic disease since 1964 (see CDC's LAC [website](#)). The mortality is low but like other encephalitides, LAC can have both personal (lasting neurological sequelae) and economic impacts. LAC is a bunyavirus with a transmission cycle involving mosquitoes such as *Aedes triseriatus* and small mammals such as squirrels and chipmunks. LAC can not only infect *Aedes albopictus* but transovarial transmission was also demonstrated.

(Tesh and Gubler 1975 Laboratory studies of transovarial transmission of La Crosse and other arboviruses by *Aedes albopictus* and *Culex fatigans*. American Journal of Tropical Medicine and Hygiene 24(5):876-880).

County	Species	Pools	Mosquitoes	Positives	MFIR
Grand Total					

Dengue (DENV) to 4 August 2015.

New Jersey will be selectively testing for DENV (including serotypes) this year. Dengue has not had a history of local transmission here in New Jersey, but each year, travelers can bring virus back from areas in the world with virus activity. This is significant as humans are NOT dead-end hosts and thus there is the potential for local transmission (i.e., New Jersey mosquitoes biting a sick person and then biting and transmitting the disease to someone else) to be established. DENV is a flavivirus but unlike WNV, *Aedes* mosquitoes are predominant vectors. In New Jersey, *Aedes albopictus* is a candidate for local transmission. There are 4 serotypes tested for Dengue. There are currently 40 imported human cases in New Jersey, no local transmission.

Note Same pools of *Ae. albopictus* are tested for the four serotypes of Dengue as well as Chikungunya.

No pools have tested positive in 2015. Currently, there are 19 imported human cases reported in New Jersey.

County	Species	DENV1		DENV2		DENV3		DENV4		Positives	MFIR
		Pool	Mos.	Pool	Mos.	Pool	Mos.	Pool	Mos.		
Atlantic		11	76	11	76	11	76	11	76		
		11	76	11	76	11	76	11	76		
Burlington		1	6	1	6	1	6	1	6		
		1	6	1	6	1	6	1	6		
Camden		5	14	5	14	5	14	5	14		
		5	14	5	14	5	14	5	14		
Cumberland		6	10	6	10	6	10	6	10		
		6	10	6	10	6	10	6	10		
Gloucester		54	393	54	393	54	393	54	393		
		54	393	54	393	54	393	54	393		
Hudson		4	50	4	50	4	50	4	50		
		4	50	4	50	4	50	4	50		

Mercer	5	11	5	11	5	11	5	11		
	5	11	5	11	5	11	5	11		
Middlesex	41	104	41	104	41	104	41	104		
	41	104	41	104	41	104	41	104		
Monmouth	90	686	90	686	90	686	71	575		
	90	686	90	686	90	686	71	575		
Morris	6	160	6	160	6	160	6	160		
	6	160	6	160	6	160	6	160		
Salem	7	8	7	8	7	8	7	8		
	7	8	7	8	7	8	7	8		
Grand Total	230	1518	230	1518	230	1518	211	1407		

Chikungunya (CHIK) to 4 August 2015.

New Jersey will be selectively testing for CHIK this year. Chikungunya is similar in symptoms to Dengue, a “breakbone” fever and has a low mortality rate. But this virus has had recent worldwide activity, and in the past year has come to the Western Hemisphere. As with Dengue, transmission can occur when a mosquito bites an infected human, then bites an uninfected human who subsequently becomes ill. CHIK is an alphavirus with *Aedes* mosquitoes as potential vectors. In New Jersey, *Aedes albopictus* is the mosquito of interest.

No pools have tested positive in 2015. Currently, there are 17 imported human cases reported in New Jersey.

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		11	76		
	<i>Aedes albopictus</i>	11	76		
Burlington		1	6		
	<i>Aedes albopictus</i>	1	6		
Camden		5	14		
	<i>Aedes albopictus</i>	5	14		
Cape May		19	28		
	<i>Aedes albopictus</i>	19	28		
Cumberland		6	10		
	<i>Aedes albopictus</i>	6	10		
Gloucester		54	393		
	<i>Aedes albopictus</i>	54	393		
Hudson		4	50		
	<i>Aedes albopictus</i>	4	50		
Mercer		5	11		
	<i>Aedes albopictus</i>	5	11		

Middlesex		41	104		
	<i>Aedes albopictus</i>	41	104		
Monmouth		90	686		
	<i>Aedes albopictus</i>	90	686		
Morris		6	160		
	<i>Aedes albopictus</i>	6	160		
Salem		7	8		
	<i>Aedes albopictus</i>	7	8		
Grand Total		249	1546		